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10/688,420

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John L. Klocke

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EXAMINER

WONG, EDNA

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN L. KLOCKE
and LINLIN CHEN

Appeal 2008-1655
Application 10/688,420
Technology Center 1700

Decided: March 4, 2008

Before EDWARD C. KIMLIN, ROMULO H. DELMENDO, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-69.

Claim 1 is illustrative:

1. An aqueous-based electroplating composition comprising:
about 35 to about 60 g/L copper;

about 65 to about 150 g/L sulfuric acid; and
a glycol-based suppressor.

The Examiner relies upon the following references as evidence of obviousness:

Reid ('857)	6,024,857	Feb. 15, 2000
Uzoh	US 2002/0033342 A1	Mar. 21, 2002
Gandikota	US 2002/0112964 A1	Aug. 22, 2002
Gabe	US 2003/0066756 A1	Apr. 10, 2003
Reid ('796)	6,793,796 B2	Sep. 21, 2004
Basol	6,833,063	Dec. 21, 2004
Wilson	US 2005/0178667 A1	Aug. 18, 2005

Appellants' claimed invention is directed to an electroplating composition comprising copper, sulfuric acid, and a glycol-based suppressor. Appellants acknowledge that electroplating compositions comprising the recited components were known in the art at the time of filing the present application, but they assert that the claimed concentrations of copper and sulfuric acid yield unexpected results. The copper concentration of the claimed composition is about 35 to about 60 g/L, and the sulfuric acid concentration is about 65 to about 150 g/L.

Rather than restate the 27 separate rejections lodged by the Examiner and further burden the record with additional, unnecessary redundancy, we will list the rejection of the appealed claims under 35 U.S.C. § 103(a) as follows:

(a) claims 1-54, and 63-65 over Reid '796 in view of Reid '857,

- (b) claims 55, 56, 58, 60 and 62 over Reid '796 in view of Uzoh,
- (c) claims 57, 59 and 61 over Reid '796 in view of Uzoh and Basol;
- (d) claims 66-69 over Reid '796 in view of Wilson,
- (e) claims 1-33 and 35-54 over Gandikota in view of Gabe,
- (f) claim 34 over Gandikota, and
- (g) claims 55-62 over Gandikota in view of Uzoh and Basol.

We have thoroughly reviewed each of Appellants' arguments for patentability, as well as the Specification data relied upon in support thereof. However, we are in full agreement with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejections for the reasons set forth in the Answer and we add the following primarily for emphasis.

We will consider first the § 103 rejections which use Reid '796 as the primary reference. There is no dispute that Reid '796, like Appellants, discloses an aqueous-based electroplating composition comprising copper, sulfuric acid, and a glycol-based suppressor having concentrations ranges for copper and sulfuric acid that totally embrace or encompass the claimed concentration ranges. In particular, the reference disclosed copper concentration of 10-60 g/L and acid concentration range of 0-300 g/L totally encompass the claimed concentration ranges of about 35 to about 60 g/L copper and about 65 to 150 g/L sulfuric acid, respectively. In cases such as this, where the prior art discloses ranges that totally encompass narrower claimed ranges, it is well settled that the prior art establishes a prima facie

case of obviousness for the claimed invention. *In re Malagari*, 499 F.2d 1297, 1303 (CCPA 1974). *See also Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782 (Fed. Cir. 1985); *In re Wertheim*, 541 F.2d 257, 163 (CCPA 1976). Also, even when a claimed concentration is outside a concentration disclosed in the prior art, the burden is on the applicant to establish with objective evidence that the change in concentration is critical, i.e., it leads to a new, unexpected result. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990, *In re Aller*, 220 F.2d 454, 456 (CCPA 1955).

Consequently, although Reid '796 exemplifies two electroplating compositions where the concentrations of copper and sulfuric acid are outside the claimed ranges, we agree with the Examiner that the reference, considered as a whole, establishes a prima facie case of obviousness for the claimed electroplating composition. As explained by the Examiner, a reference must be considered for all that it fairly teaches in addition to its exemplified embodiments.

As evidence of unexpected results, Appellants rely upon the data set forth at Specification pages 22-26. According to Appellants, the data demonstrates that the claimed electroplating compositions give far superior deposition fill results compared to electroplating compositions having copper and sulfuric acid concentrations outside the claimed ranges. However, we concur with the Examiner's analysis that Appellants' Specification data falls far short of being commensurate in scope with the degree of protection sought by the appealed claims. *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983); *In re Clemens*, 622 F.2d 1029, 1035

(CCPA 1980). The Examiner accurately points out that the concentrations of copper and sulfuric acid used in the Specification examples are not representative of and commensurate in scope with the broad ranges presently claimed. Specifically, the Specification examples use no more than 50 g/L copper whereas the maximum claimed amount is 60 g/L, and only 80 and 100 g/L sulfuric acid although the claimed range is about 65 to about 150 g/L. Accordingly, it can be seen that the limited showing in the Specification does not demonstrate unexpected results over the wide range of electroplating compositions claimed, e.g., a composition comprising 35 g/L copper and 150 g/L sulfuric acid. We note that Appellants have not refuted the Examiner's reasonable criticism of the data which is valid on its face.

The Examiner's § 103 rejections using Gandikota as a primary reference are sustainable under the same rationale set forth above. Gandikota discloses an electroplating method using a composition comprising about 35 g/L to about 50 g/L copper, which falls directly within the claimed range of about 35 to about 60 g/L, and sulfuric acid at a concentration of about 4 g/L to about 60 g/L. Since the term "about" recited in the appealed claims and used in the reference disclosure permits some latitude or variance, it can be seen that Gandikota discloses a concentration of sulfuric acid that meets the claimed lower limit of about 65g/L. Hence, we are convinced that one of ordinary skill in the art would find that electroplating methods and compositions within the scope of the appealed claims are prima facie obvious over electroplating methods and

compositions fairly taught by Gandikota. Significantly, we find that Appellants do not rely upon Specification data as evidence of unexpected results for the purpose of rebutting the prima facie case of obviousness established by the Examiner using Gandikota as a primary reference.

In conclusion, based on the foregoing, and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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